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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

BOLDA, ERIC L

ART UNIT

PAPER NUMBER

3663

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/561,508	<b>Applicant(s)</b> SWART ET AL.	
	<b>Examiner</b> ERIC BOLDA	<b>Art Unit</b> 3663	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 December 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/19/2005</u> .  | 6) <input type="checkbox"/> Other: ____.                          |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the adjustable gain amplifier (see Specification, p. 5, lines 19-21) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

2. The disclosure is objected to because of the following informalities: symbols and text surrounding the equations (1) and (2) are incomprehensible.

Appropriate correction is required.

***Claim Objections***

3. Claims 2, 9 and 10 objected to because of the following informalities: in claims 2 and 9 the word “tunable” is misspelled. In claim 10, Amplified Spontaneous Emission is incorrectly abbreviated ASK. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 1, and claims 2-10 dependent on it, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites “an optical splitter being connectable to an optical power source, for directing at least part of optical power from the optical power source to each of the first and second optical paths”; thus it is unclear whether the optical power source is part of the claimed invention. Similarly, claim 7 recites “the optical filter has an attenuation band corresponding to a range of wavelengths at which a peak in the spectrum of the optical power source occurs”, and claim 10 recites “the optical power source is an Amplified Spontaneous Emission source” that can only have meaning as limitations if the optical source is considered to be part of the invention. Claim 9 has a further problem: the clause “the apparatus is sufficiently tun[e]able” lacks antecedent basis, since no mention of tuning or tunable parts is made in claim 1.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 2, 5, 7, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Abe et al. (US 2002,0191274).

8. Abe et al discloses in Fig. 6 a variable optical gain equalizer with

- A first optical path (upper) and a second optical path (lower)
- An optical splitter (112) connected to an input fiber. The input fiber is capable of being connected to an optical power source.
- An optical filter (114) provided in the first optical path
- An optical combiner (118) configured to combine at least part of the optical signals from each of the first and second paths into an output channel, fiber (122)

With regard to claim 2, the optical splitter is tunable (has a variable branching ratio, para. [0069])

With regard to claim 5, the optical combiner is a fixed combiner, and the optical combiner is a 3dB fixed optical coupler in at least one embodiment [0071].

With regard to claim 7, the optical filter acts as a notch filter for at least some broadband optical sources. See the transmittance vs wavelength plot in Fig. 10A.

With regard to claim 8, the optical paths form a Mach-Zehnder interferometer.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. as applied to claim 1 above, and further in view of Ting et al. Abe does not specifically state the filter is a long period grating (LPG); rather summarized the possibilities including various optical fiber grating filters [0069]. Ting teaches a long period grating (54,56) [0001] in an optical fiber, as part of a Mach-Zehnder interferometer. It would have been obvious to one skilled in the art (e. g. an optical engineer) to choose the optical filter of Abe to be a LPG since a similar application is suggested in Ting, and the LPG provides the filtering functionality required of Abe.

11. Claims 3-4 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. as applied to claim 1 above, and further in view of Augustsson (US 6,473,254). With regard to claim 3, Abe does not disclose an adjustable gain optical amplifier in the second optical path. However, Augustsson teaches (Fig. 2) as part of an apparatus for equalizing an optical spectrum, an optical amplifier (52) in combination with a fiber grating (62) functioning as a filter, on a path (32) separate from the other optical paths (34,36,38). The amplifier also includes a variable optical attenuator section (72), so that a function of variable optical amplification is achieved. 3rd col. lines 7-13.

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Since the purpose of Augustsson's device is similar to Abes (i. e. equalizing an optical spectrum), it would have been obvious to one skilled in the art (e. g. an optical engineer) to incorporate the variable optical amplifier (optical amplifier and variable optical attenuator) into the optical path with the filter in the device of Abe, thereby reducing the losses of desired optical signals (Augustsson, 1<sup>st</sup> col. lines 31-37).

With regard to claim 4, the gain is greater or less than 1 depending on the setting of the variable optical attenuator.

With regard to claims 9-10, it is well within the skill of the art at the time of invention that the optical attenuator and amplifier can be set to attenuate or amplify the input signal by at least 10dB.

### ***Information Disclosure Statement***

12. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

13. The information disclosure statement filed on Dec. 19, 2005 has been considered by the Examiner.

### ***Conclusion***

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Shigehara, Davis et al., and Allsop et al.

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15. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to ERIC BOLDA whose telephone number is 571-272-8104. The examiner can normally be reached on M-F from 8:30am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Jack Keith, can be reached on 571-272-6878. Please note the fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Eric Bolda/

Primary Examiner, Art Unit 3663